

WHAT IS CLAIMED IS:

1. A fluorine-containing resin composition comprising (I) a fluorine-containing prepolymer and (II) a compound containing a rare
5 earth metal ion and/or a rare earth metal element, wherein
(1) the fluorine-containing prepolymer (I) is a non-crystalline polymer having a fluorine content of not less than 25 % by weight and
(2) the fluorine-containing prepolymer (I) has a cure site in a side chain of the polymer and/or at an end of a trunk chain of the polymer.

10

2. The fluorine-containing resin composition of Claim 1, wherein the fluorine-containing prepolymer (I) is a polymer having a maximum absorption coefficient of not more than 1 cm^{-1} in a wavelength range of from 1,290 to 1,320 nm.

15

3. The fluorine-containing resin composition of Claim 1, wherein the fluorine-containing prepolymer (I) is a polymer having a maximum absorption coefficient of not more than 1 cm^{-1} in a wavelength range of from 1,530 to 1,570 nm.

20

4. The fluorine-containing resin composition of Claim 1, wherein the fluorine-containing prepolymer (I) is a polymer having a maximum absorption coefficient of not more than 1 cm^{-1} in a wavelength range of from 600 to 900 nm.

25

5. The fluorine-containing resin composition of Claim 1, wherein the cure site of the fluorine-containing prepolymer (I) is a

carbon-carbon double bond.

6. The fluorine-containing resin composition of Claim 5,
wherein the fluorine-containing prepolymer (I) has a carbon-carbon
5 double bond at an end of the polymer side chain.

7. The fluorine-containing resin composition of Claim 1,
wherein the fluorine-containing prepolymer (I) has recurring units of a
fluorine-containing ethylenic monomer having a cure site.

10

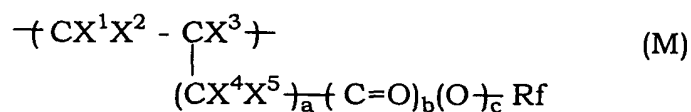
8. The fluorine-containing resin composition of Claim 1,
wherein the fluorine-containing prepolymer (I) is a fluorine-containing
polymer having a number average molecular weight of from 500 to
1,000,000 and represented by the formula (1):

15



in which the structural unit M is a structural unit derived from a
fluorine-containing ethylenic monomer represented by the formula (M):

20



wherein X^1 and X^2 are the same or different and each is H or F; X^3 is H,
25 F, CH_3 or CF_3 ; X^4 and X^5 are the same or different and each is H, F or
 CF_3 ; Rf is an organic group in which 1 to 3 of Y^1 (Y^1 is a monovalent
organic group having 2 to 10 carbon atoms and an ethylenic carbon-

carbon double bond at its end) are bonded to a fluorine-containing alkyl group having 1 to 40 carbon atoms or a fluorine-containing alkyl group having 2 to 100 carbon atoms and ether bond; a is 0 or an integer of from 1 to 3; b and c are the same or different and each is 0 or 1,

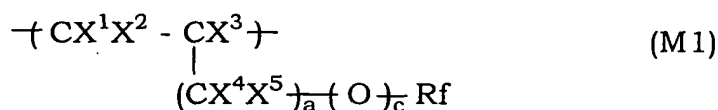
5 the structural unit A is a structural unit derived from monomer copolymerizable with the fluorine-containing ethylenic monomer providing the structural unit M,

and the structural unit M and the structural unit A are contained in amounts of from 0.1 to 100 % by mole and from 0 to 99.9 % by mole,

10 respectively.

9. The fluorine-containing resin composition of Claim 8, wherein the fluorine-containing prepolymer (I) is the polymer of the formula (1) and the structural unit M is a structural unit M1 derived

15 from a fluorine-containing ethylenic monomer and represented by the formula (M1):



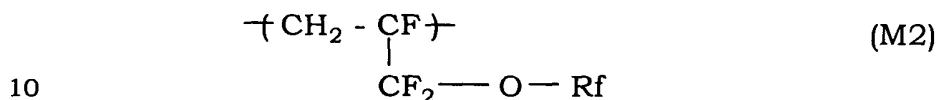
20

wherein X¹ and X² are the same or different and each is H or F; X³ is H, F, CH₃ or CF₃; X⁴ and X⁵ are the same or different and each is H, F or CF₃; Rf is an organic group in which 1 to 3 of Y¹ (Y¹ is a monovalent organic group having 2 to 10 carbon atoms and an ethylenic carbon-

25 carbon double bond at its end) are bonded to a fluorine-containing alkyl group having 1 to 40 carbon atoms or a fluorine-containing alkyl group having 2 to 100 carbon atoms and ether bond; a is 0 or an integer of from

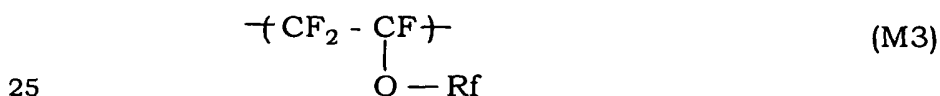
1 to 3; c is 0 or 1.

10. The fluorine-containing resin composition of Claim 8, wherein the fluorine-containing prepolymer (I) is the polymer of the formula (1) and the structural unit M is a structural unit M2 derived from a fluorine-containing ethylenic monomer and represented by the formula (M2):



wherein Rf is an organic group in which 1 to 3 of Y¹ (Y¹ is a monovalent organic group having 2 to 10 carbon atoms and an ethylenic carbon-carbon double bond at its end) are bonded to a fluorine-containing alkyl group having 1 to 40 carbon atoms or a fluorine-containing alkyl group having 2 to 100 carbon atoms and ether bond.

11. The fluorine-containing resin composition of Claim 8, wherein the fluorine-containing prepolymer (I) is the polymer of the formula (1) and the structural unit M is a structural unit M3 derived from a fluorine-containing ethylenic monomer and represented by the formula (M3):



wherein Rf is an organic group in which 1 to 3 of Y¹ (Y¹ is a monovalent

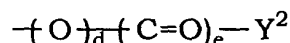
organic group having 2 to 10 carbon atoms and an ethylenic carbon-carbon double bond at its end) are bonded to a fluorine-containing alkyl group having 1 to 40 carbon atoms or a fluorine-containing alkyl group having 2 to 100 carbon atoms and ether bond.

5

12. The fluorine-containing resin composition of Claim 8, wherein at least one of Y^1 in Rf of said formula (M) is bonded to an end of Rf.

10

13. The fluorine-containing resin composition of Claim 12, wherein Y^1 in Rf of said formula (M) is:

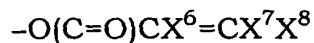


15

wherein Y^2 is an alkenyl group or fluorine-containing alkenyl group having 2 to 5 carbon atoms and an ethylenic carbon-carbon double bond at an end thereof; d and e are the same or different and each is 0 or 1.

20

14. The fluorine-containing resin composition of Claim 13, wherein Y^1 in Rf of said formula (M) is:



25

wherein X^6 is H, F, CH_3 or CF_3 ; X^7 and X^8 are the same or different and each is H or F.

15. A fluorine-containing resin composition which comprises

the fluorine-containing prepolymer (I) of Claim 1 and a rare earth organometal complex (II-2).

16. The fluorine-containing resin composition of Claim 1
5 which contains an active energy curing initiator (III) in addition to the fluorine-containing prepolymer (I) and the compound (II) containing a rare earth metal ion and/or a rare earth metal element.

17. The fluorine-containing resin composition of Claim 16,
10 wherein the fluorine-containing prepolymer (I) is a fluorine-containing prepolymer having an ethylenic carbon-carbon double bond having radical reactivity and the active energy curing initiator (III) is a photoradical generator (III-1).

15 18. A fluorine-containing optical amplification material obtained by curing the fluorine-containing prepolymer (I) in the fluorine-containing resin composition of Claim 1.

19. An optical amplifying device having a core portion and a
20 clad portion, wherein the core portion is made of the fluorine-containing optical amplification material of Claim 18.

20. A fluorine-containing light emission material obtained by
curing the fluorine-containing prepolymer (I) in the fluorine-containing
25 resin composition of Claim 1.

21. A light emitting device in which a part or the whole of the

light emitting device is made of the fluorine-containing light emission material of Claim 20.

22. A light emitting device having a core portion and a clad
5 portion, wherein the core portion is made of the fluorine-containing light emission material of Claim 20.